What is claimed is:

1. An optical analysis instrument comprising:

(a) a support frame;

(b) a target area attached to said support frame configured to receive and securely hold a flow cell comprising a reflective sensor in a substantially stationary position;

(c) a light source assembly comprising a light source and source optics for focusing light emitted from said light source, which light source assembly is oriented to project a beam of light onto said reflective sensor, and which light source assembly is rotatably attached to said support frame so as to permit alteration of the orientation of said light source with respect to the position of said sensor;

(d) means for altering the orientation of said light source assembly;

(e) means for recording the angular change in the orientation of said light source assembly;

(f) a detector assembly attached to said support frame oriented to receive light reflected from said sensor.

2. The optical analysis instrument of Claim 1, wherein said reflective sensor is a grating coupled surface plasmon resonance (SPR) sensor.

3. The optical analysis instrument of Claim 1, wherein said means (d) are manual adjustment means.

4. The optical analysis instrument of Claim 1, wherein said means (d) are motor means.

5. The optical analysis instrument of Claim 1, wherein said means (d) are a stepper-type motor.

6. The optical analysis instrument of Claim 1, wherein said means (e) is selected from the group consisting of accurate angular change data from a stepper motor, a rotary encoder, and a linear encoder.

7. The optical analysis instrument of Claim 6, wherein said means (e) includes a built-in indexing mark providing a reference point at the start of each optical analysis.

8. The optical analysis instrument of Claim 1, wherein said light source is a light emitting diode (LED) or a plurality of LEDs.

9. The optical analysis instrument of Claim 8, wherein said light source is a LED emitting a narrow band of wavelengths.

10. The optical analysis instrument of Claim 8, wherein said LED or plurality of LEDs is encapsulated in a plastic material and wherein said plastic material is optically flat or made optically flat so as to minimize optical distortion caused by the plastic material.

11. The optical analysis instrument of Claim 1, wherein said light source beam is offset from the central axis of said optics to provide a lateral beam skew sufficient to eliminate ghost reflections caused by light reflecting from optical surfaces of the instrument.

12. The optical analysis instrument of Claim 1, wherein said light source beam is offset from the central axis of said optics to provide a lateral beam skew of 2 degrees.

13. The optical analysis instrument of Claim 1, wherein said detector assembly (f) is mounted on a plurality of gimbals permitting orientation of the detector assembly to be altered with respect to the position of the sensor.

14. The optical analysis instrument of Claim 13, wherein said detector assembly (f) comprises a detector comprising a detector sensing element, and a lens assembly for focusing a reflected image of said sensor onto said detector sensing element, which lens assembly is positioned between said detector sensing element and said target area.

15. The optical analysis instrument of Claim 14, wherein said lens assembly comprises one or more refractive elements, an aperture stop, a corrector plate, and a detector window.

16. The optical analysis instrument of Claim 15, wherein said lens assembly is a double telecentric lens assembly.

17. The optical analysis instrument of Claim 15, wherein said detector assembly further comprises a passive cold finger positioned between said detector window and said corrector plate.

18. The optical analysis instrument of Claim 15, wherein the orientation of said detector assembly and the refractive elements of said lens assembly are effective to match the dimensions of a reflected image of said sensor to the dimensions of the detector sensing element.

19. The optical analysis instrument of Claim 15, wherein said detector and said lens assembly may be independently adjusted with respect to the position of the sensor.

20. The optical analysis instrument of Claim 15, wherein said detector is a CCD camera and said sensing element is a CCD chip.

21. The optical analysis instrument of Claim 1, further comprising:
(g) a fluidics system comprising

(i) one or more solution reservoirs and/or solution input connections,

(ii) supply tubing connecting said one or more reservoirs and/or input connections with said target area,

(iii) removal tubing connecting said target area with one or more elements selected from the group of waste receptacles, solution reservoirs, collection containers, and the target area,

(iv) one or more pumps for impelling fluids through said supply and removal tubing.

22. The optical analysis instrument of Claim 21, wherein said fluidics system (g) further includes a bubble blast means for flushing entrapped air bubbles from the fluidics system.

23. The optical analysis instrument of Claim 21, wherein a portion of said fluidics system and said target area are enclosed in a thermal chamber.

24. The optical analysis instrument of Claim 23, wherein the temperature of fluids being conducted to the target area is controlled using one or more passive heat exchangers.

25. The optical analysis instrument of Claim 24, wherein the heat sinks comprise a series of segmented passive heat exchangers.

26. The optical analysis instrument of Claim 23, wherein the temperature of fluids being conducted to the target area is controlled using one or more active heating or cooling loops.